

CLAIMS

What is claimed is:

- 5 1. A solar collector comprising:
- a glass mirror; and
- a composite panel, wherein a back of said mirror is affixed to a front surface of said composite panel, said composite panel comprising a front sheet affixed to a surface of a core material and a back sheet affixed to an opposite surface of said core material.
- 10 2. The solar collector of claim 1 further comprising a sealing strip positioned between said glass mirror and said front surface of said composite panel.
3. The solar collector of claim 1 wherein said sealing strip comprises EPDM.
- 15 4. The solar collector of claim 1 wherein said glass mirror comprises a silvered backing.
5. The solar collector of claim 1 wherein said front sheet and back sheet comprise carbon steel.
- 20 6. The solar collector of claim 5 wherein said carbon steel front sheet and carbon steel back sheet comprise a gauge between approximately 24 and 28 gauge.
7. The solar collector of claim 1 wherein said core material comprises a honeycomb structure.
- 25 8. The solar collector of claim 7 wherein said honeycomb core material comprises aluminum.

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9. The solar collector of claim 8 wherein said aluminum honeycomb core material comprises aluminum foil between approximately 0.015 and 0.004 inch foil.

10. The solar collector of claim 1 wherein said core material comprises foam selected from
5 the group consisting of polystyrene, polyurethane, and polyvinyl chloride.

11. The solar collector of claim 1 wherein said core material comprises a cellulose based material.

10 12. A method of making a solar collector comprising the following steps:
a) affixing a glass mirror to a front sheet to make a glass/sheet laminate;
b) affixing the sheet side of the laminate to a surface of a core material;
c) affixing a back sheet to an opposite surface of the core material to make
a composite panel ; and
15 d) shaping the composite panel to a specific curvature by curing the
composite panel over a mandrel of approximately inverse curvature.

13. The method of claim 12 further comprising the step of positioning a sealing strip between
the glass mirror and front sheet to minimize the accumulation of moisture between the glass mirror and
20 front sheet.

14. The method of claim 12 further comprising the step of stacking a plurality of the
composite panels atop a single, one-sided mandrel to allow simultaneous construction of solar collectors.

25 15. The method of claim 12 further comprising the step of applying a vacuum to the
composite panel in contact with the mandrel.

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16. The method of claim 14 further comprising the step of applying a vacuum to the composite panel in contact with the mandrel.

17. The method of claim 13 wherein the sealing strip comprises EPDM.

18. The method of claim 12 wherein the glass mirror comprises a silvered backing.

19. The method of claim 12 wherein the front sheet and back sheet comprise carbon steel.

20. The method of claim 19 wherein the carbon steel front sheet and carbon steel back sheet comprise a gauge between approximately 24 and 28 gauge.

21. The method of claim 12 wherein the core material comprises a honeycomb structure.

22. The method of claim 21 wherein the honeycomb structure comprises aluminum.

23. The method of claim 22 wherein said aluminum honeycomb structure comprises aluminum foil between approximately 0.015 and 0.004 inch foil.

24. The method of claim 12 further comprising the step of stacking a plurality of the composite panels above and below a single, double-sided mandrel to allow simultaneous construction of solar collectors.

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25. A method of making a solar collector comprising the following steps:

- a) affixing a glass mirror to a front sheet to make a glass/sheet laminate;
- b) placing the glass/sheet laminate mirror side down over a mandrel of
5 specific curvature;
- c) applying a coating expandable foam on the sheet side of the laminate;
- d) positioning a back sheet in a frame such that as the foam expands the
foam comes in contact with a surface of the back sheet and forces the composite panel to adopt the
inverse shape of the mandrel; and
- 10 e) removing the frame from the back sheet and the composite panel from
the mandrel.

26. The method of claim 25 wherein said expandable foam is selected from the group
consisting of polystyrene, polyurethane, and polyvinyl chloride.

27. The method of claim 25 wherein the glass mirror comprises a silvered backing.

28. The method of claim 25 wherein the front sheet and back sheet comprise carbon steel.

29. The method of claim 25 wherein the carbon steel front sheet and carbon steel back sheet
comprise a gauge between approximately 24 and 28 gauge.

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